Environment and Labour

Reference Guide To The

FALL PROTECTION AND SCAFFOLDING REGULATIONS

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The commentary found in this document is not intended to be an exhaustive interpretation or to constitute legal advice to members of the public. This document is prepared for convenience only, and for accurate reference, the reader should see the official volumes of the legislation.

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REFERENCE GUIDE TO THE FALL PROTECTION AND SCAFFOLDING REGULATIONS

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Part I: GENERAL

Citation and application

1 These regulations may be cited as the *Fall Protection and Scaffolding Regulations*.

2 These regulations apply to all workplaces to which the *Occupational Health and Safety Act* applies.

These regulations apply to all workplaces in Nova Scotia except those workplaces where the work is considered employment by the federal government. Dec. 5, 1996

Stunt jumps – theatrical and deliberate jumps – are subject to these regulations. Nov. 19, 2003

Interpretation

3 (a) "Act" means the *Occupational Health and Safety Act*;

(b) "ANSI" means the American National Standards Institute;

(c) "anchor point" means a component that is attached to a structure and to which fall protection or scaffold components are secured;

An anchor point is the point at which the load is transferred from lifelines, static lines, tiebacks etc. to a structure capable of withstanding the maximum imposed load or 17.8 kN (4000lbs), whichever is greater. May 18, 2000

(d) "anti-two blocking device" means a device that warns a person operating a hoisting device that continued movement of the load may cause the load to strike or come into contact with the upper sheaves of the hoisting device;

See Appendix A for a diagram that includes an anti-two blocking device. November 28, 2000.

(e) "approved" means approved by the Nova Scotia Department of Labour or by an approval agency or authority approved by the Nova Scotia Department of Labour;

(f) "arborist" means a person trained and employed, in whole or in part, to climb trees for any economic or scientific purpose, including

(i) detection and treatment of disease, infections or infestations,

(ii) pruning, spraying or trimming,

(iii) repairing damaged trees,

(iv) assessing growth or harvesting potential, or

(v) scientific research;

(g) "boatswain's chair" means a seat attached to a suspended rope, designed to accommodate one person in a sitting position;

Types of boatswain's chairs include those with rope falls or with a descent control device (commonly used in window cleaning) or with powered climber (often used where considerable amount of travel is involved). Dec. 5, 1996.
"boatswain's chair" is also known as "bosun's chair".

See Appendix B for diagrams of Boatswain's chairs. November 28, 2000.

(h) "bracket scaffold" means a scaffold consisting of a work platform supported by brackets attached to a structural wall;

(i) "CGSB" means the Canadian General Standards Board;

(j) "CSA" means the Canadian Standards Association;

(k) "cantilevered scaffold" means a scaffold with a work platform that is directly attached to components that extend out from a building or a structure;

Cantilevered scaffolds are typically used as light duty work platforms or heavy duty material platforms. May 18, 2000

(l) "competent person" means a person who is

(i) qualified because of that person's knowledge, training and experience to do the assigned work in a manner that will ensure the health and safety of persons in the workplace, and

(ii) knowledgeable about the provisions of the Act and the regulations, that apply to the assigned work, and about potential or actual danger to health or safety associated with the assigned work;

(m) "crane supported work platform" means a work platform suspended from the cable of a hoist or crane;

See Appendix C for a diagram of a crane supported work platform. November 28, 2000.

(n) "debris net" means a net that is used to catch material and debris which can drop from work areas;

(o) "fall arrest system" means a system of physical components attached to a person that stops a person during a fall;

Fall arrest system components may include a full body harness, lanyard, rope grab, vertical lifeline, static line, anchor points and other connecting components. May 18, 2000

(p)	"fall protection" means a harness, net, rope, safety belt, structure or other equipment, or device or means of (i) restraining a person who is at risk of falling, or (ii) stopping a person who has fallen;	See Appendix D for a diagram of a fall arrest system. Nov. 28, 2000.
(q)	"fork-lift platform" means a work platform supported by an industrial lift truck;	See Appendix E for a diagram of a fork-lift platform. November 28, 2000.
(r)	"full body harness" means a harness consisting of leg and shoulder straps and an upper back suspension unit that will distribute and reduce the impact force of any fall;	See Appendix D for a diagram of a full body harness. November 28, 2000.
(s)	"guardrail" means a temporary system of vertical and horizontal members that warn of a fall hazard and reduce the risk of a fall;	
(t)	"heavy duty scaffold" means a scaffold designed to support a uniformly distributed load of 366 kg/m^2 or more;	This term is not used in the regulation
(u)	"ladderjack scaffold" means a scaffold erected by means of attaching one or more brackets to one or more ladders to support a work platform;	Ladderjack scaffolds consist of brackets attached to two extension ladders with planks spanning between the ladders. These scaffolds are prohibited in all workplaces as per subsection 18(3) of this regulation. May 18, 2000 See Appendix F for a diagram of a ladderjack scaffold. November 28, 2000.
(v)	"lanyard" means a flexible line used to secure a person to a lifeline, a static line or a fixed anchor point;	See Appendix D for a diagram including a lanyard. November 28, 2000.
(w)	"lifeline" means a vertical line attached to a fixed anchor point or a static line and to which a lanyard and a ropegrab are attached;	Lifelines include vertical lifelines and horizontal lifelines (static lines). May 18, 2000 See Appendix D for diagram including a lifeline. November 28, 2000.
(x)	"light duty scaffold" means a scaffold designed to support a uniformly distributed load of not more than 366 kg/m^2;	Light duty scaffolds are required where the scaffold is intended to support workers, hand tools and materials up to 366kg/m^2. Light duty scaffolds include pumpjacks, suspended scaffolds such as swing stages, 10ft span scaffolds with single planks

and other scaffold systems where loading conditions do not exceed 366 kg/m^2. May 18, 2000

366kg/m^2 = 75lbs/ft^2May 18, 2000

(y) "permanent powered suspension work platform" means a powered work platform that is suspended from a suspension mechanism which is a permanent part of a building or structure;

(z) "personnel safety net" means a net that is used to catch a person during a fall;

(aa) "power operated elevating work platform" means a work platform elevated and lowered by means of a mechanical, hydraulic, pneumatic or other powered mechanism;

Power operated elevating work platforms are more commonly known as scissor lifts, telescopic and articulated booms, aerial ladders and bucket trucks and do not include cranes. May 18, 2000

See Appendix G for diagrams of power operated elevating work platforms. November 28, 2000.

(ab) "practicable" means physically possible in light of current knowledge and invention;

(ac) "professional engineer" means a person who is a professional engineer within the meaning of the *Engineering Professions Act* and is competent to do the work being performed;

Note also the requirement that, in addition to being qualified pursuant to the Engineering Professions Act, a professional engineer in this definition must also be competent to perform the work in question. This is an issue to be determined according to the facts in each case. Dec. 5, 1996.

(ad) "pumpjack scaffold" means a scaffold consisting of a work platform supported by vertical poles and adjustable support brackets;

(ae) "reasonably practicable" means practicable unless the person on whom a duty is placed can show that there is a gross disproportion between the benefit of the duty and the cost, in time, trouble and money, of the measures to secure the duty;

(af) "rolling scaffold" means an assembled scaffold

(i) supported by wheels, and

See Appendix H for a diagram of a rolling scaffold. November 28, 2000.

(ii) moved manually;

(ag) "roofing bracket" means a bracket

(i) that is secured to a sloped roof, and

(ii) to which a work platform is secured;

(ah) "ropegrab" means a mechanical fall-arrest device that

(I) is attached to a lifeline and a lanyard, and

(ii) locks itself immediately on the lifeline in the event of a fall;

Rope grabs must be a manufactured device, in accordance with CSA Standard Z259.2-M1979 "Fall Arresting Devices, Personnel Lowering Devices and Life Lines". The traditional practice of tying a triple hitch knot to a lifeline is prohibited. May 18, 2000

See Appendix D for a diagram including a rope grab. November 28, 2000.

(ai) "safe means of access and egress" means equipment or a structure that is built to prevent falls by persons going to or from a work area;

Safe means of access and egress are typically provided by stairs, ladders or integral ladders built into scaffold systems. May 18, 2000

(aj) "safe surface" means an area which

(i) has sufficient size and strength to adequately support a person who falls, and

(ii) is sufficiently horizontal to prevent a further fall by a person who has fallen;

A safe surface is a horizontal area that is able to adequately support a person that has fallen and is also able to prevent a further fall. Surfaces other than the ground may be considered a safe surface under certain circumstances. The safe surface should be reasonably free of debris, to the extent that any debris found on the surface would not significantly contribute to further injury. July 29, 2003

(ak) "safety belt" means a belt worn by a person as a means of fall protection;

Safety belts may be used for work positioning or as travel restraint to prevent a person from accessing an area where a fall may occur. Safety belts are never to be considered part of a fall arrest system. May 18, 2000

(al) "scaffold" means

(i) an elevated work platform, or

(ii) a suspended work platform and the supporting components of the work platform;

See Appendix I for diagrams of scaffolds. November 28, 2000.
This definition is not intended to treat "portable steps". Stepstools and portable ladders are not under scaffolds. February 4, 2002.

(am) "softener" means padding or hoses that are

Softeners may be required where the fibre or wire

used with a lifeline, suspended scaffold or static line to prevent a rope from being cut or chafed;

rope extends over parapet walls, around building corners or other areas where damage to the rope may occur. May 18, 2000

See Appendix J for a diagrams of softeners. November 28, 2000.

(an) "static line" means a rope

(i) that is attached horizontally to two or more fixed anchor points, and

(ii) to which a fall arrest system is attached;

See Appendix K for a diagram including a static line. November 28, 2000.

Static lines act as a moving anchorage and allow a worker to travel horizontally for long distances without the risk of large pendulum or swing falls. May 18, 2000

(ao) "suspended scaffold" means a scaffold with a work platform supported by ropes suspended from components cantilevered out from a building or other structure, and includes a swingstage, a boatswain's chair and a multi-point suspended scaffold;

See Appendix K for diagrams of suspended scaffolds. November 28, 2000.

(ap) "swingstage" means a scaffold with a work platform supported by two ropes;

(aq) "temporary flooring" means a horizontal working surface that

(i) is designed to give access to areas that do not have permanent flooring, and

(ii) will prevent a worker from falling;

(ar) "thimble" means a metal insert for the inside of a wire rope eye, used when forming an attachment loop, to prevent wear on the rope;

(as) "wooden carpenter's portable bracket scaffold" means a triangular wooden bracket scaffold with gussets that is attached to a vertical wall when in use and which does not normally have another means of support during use;

Wooden carpenter's portable bracket scaffolds are prohibited in all workplaces as per subsection 18(3) of this regulation. May 18, 2000

A wooden carpenter's portable bracket scaffold is differentiable from a legal "bracket scaffold" by the fact that:
1) it is made of wood
2) is triangular in shape
3) it uses gussets (plates on brackets for

strengthening the angle)
4) it normally only has one means of support
5) it is attached to a vertical wall (not hung)
November 28, 2000

See Appendix L for a diagram of a wooden carpenter's portable bracket scaffold. November 28, 2000.

(at) "work area" means a location at the workplace at which an employee is, or may be required or permitted to be, stationed and includes a work platform; and

(au) "work platform" means a temporary horizontal working surface that provides access and support to a person at the workplace.

Duties of workplace parties

4 (1) A specific duty provided for in these regulations does not limit the generality of any other duty contained in the Act or any other regulations in force under the authority of the Act.

(2) A duty or requirement imposed on an employer or an employee pursuant to these regulations applies to a self-employed person, with such modifications as the circumstances require.

The duties imposed by these regulations does not exempt or modify general duties imposed on workplace parties under the Act and, where a duty is imposed on an employer or an employee, that duty applies to self-employed persons also. Dec. 5, 1996.

The *Act* specifically defines self-employed person for the purposes of occupational health and safety law in Nova Scotia. Dec. 5, 1996.

Measurements of lumber

5 Measurements of lumber in these regulations are nominal for dressed dimensions, unless rough lumber or dimensions are specified.

"nominal" means a description of a dimension that may vary from the actual dimension. For example, a piece of lumber may be described as a "2x4", but in actual fact it is 1 5/8" by 3 5/8". May 18, 2000

Inconsistencies with incorporated standards

6 Where there is an inconsistency between a standard or a manufacturer's specification referred to in these regulations and a requirement of these regulations, the requirement of these regulations shall prevail.

These regulations prevail in the event of a conflict with a standard or with a manufacturer's specifications. Dec. 5, 1996.

PART II: FALL PROTECTION

Fall protection required

7 (1) Where a person is exposed to the hazard of falling from a work area that is

(a) 3 m or more above the nearest safe surface or water;

(b) above a surface or thing that could cause injury to the person upon contact; or

(c) above an open tank, pit or vat containing hazardous material,

(i) the person shall wear a fall arrest system that includes a full body harness, a lanyard and an anchor point and that otherwise complies with Section 8,

(ii) a guardrail shall be provided that meets the requirements of Section 9,

(iii) a personnel safety net shall be provided that meets the requirements of Section 10,

(iv) temporary flooring shall be provided that meets the requirements of Section 14, or

(v) a means of fall protection shall be provided that provides a level of safety equal to or greater than a fall arrest system.

Fall protection is provided to restrain a person who is at risk of falling or stopping a person who has fallen. Fall protection is automatically required where a person is exposed to the hazard of a fall equal to or greater than 3.0m (10'), however, fall protection may be required at lower heights depending on the surface condition below. May 18, 2000

The method of providing fall protection is intentionally flexible so workplace employers can adopt the appropriate method for their circumstances. However, Section 17 Roof Work requires specific types of fall protection and should be read in conjunction with Section 7. May 18, 2000

Section 7 contains options for achieving compliance with its requirements and one of these options is to create an "equivalency" to a fall arrest system. The equivalency afforded by S. 7(1)(c)(v) applies to fall arrest systems only. It does not provide for an equivalency to other fall protection methods or requirements in the regulation. May 18, 2000

(2) Despite subsection (1)

(a) where a person is entering or exiting a work area by a safe means of access and egress, the requirements of subsection (1) do not apply; and

(b) where work must be performed on or from a vehicle, rail car or other mobile equipment, fall protection is required only where and to the extent reasonably practicable;

(c) where it would not be practical to perform work other than from a ladder and it is not practical for the worker to maintain three points of contact while performing the work, fall protection is required only where and to the extent practical; and

"Practical" is to be generally interpreted the same as "reasonably practicable" a defined term (Feb. 1, 2004)

(d) where density of tree branches prevents an arborist from crotching, fall protection is required only where and to the extent practical.

(3) Where a person is exposed to the hazard of falling from a work area that is in a location other than those specified in clauses (1)(a), (b) or (c) and an officer determines that fall protection is required, fall protection shall be used.

Fall protection may be required in locations other than those described in Section 7.The requirement will be dependent on specific conditions at that workplace such as the condition of the surface below, the presence of hazards and the risk of a further fall occurring. May 18, 2000

Fall arrest systems

8 (1) A fall arrest system shall

(a) be adequately secured to

(i) an anchor point, or

(ii) a lifeline that is

(A) securely fastened to an anchor point, or

(B) attached to a static line that is securely fastened to an anchor point

that is capable of withstanding either the maximum load likely to be imposed on the anchor point or a load of 17.8 kN, whichever is greater;

Fall arrest systems consist of physical components worn by and attached to a person that stops a person during a fall. The system must be adequately secured and adjusted to the user, as per the manufacturers specifications, so as to minimize the force of the fall on the user. May 18, 2000

Independent anchor points for each fall arrest system are not required. The anchor point, however, must be capable of withstanding the maximum load imposed or 17.8 kN, whichever is greater. May 18, 2000

Beyond stipulating the anchor point's capability to withstand the greater of the maximum load imposed on it or 17.8 kN, the regulation does not specify the where and how of securing to an anchor point (Feb. 1, 2004)

(b) include a lanyard that

(i) is attached to an anchor point or lifeline, where practicable, above the shoulder of the user, and

(ii) complies with CSA Standard Z259.1-1995, "Fall Arresting Safety Belts and Lanyards for the Construction and Mining Industries";

Lanyards may be made of rope or webbing and may be attached to a full body harness by means of a self-locking snap hook or a spliced loop and thimble. Attachment to a lifeline is to be provided by a manufactured rope grab while attachment to anchor points may be provided by other manufactured devices such as scaffold hooks or karabiners. Lanyards should be attached to the anchor point or lifeline above the shoulder of the user if practicable, as this will reduce the possible fall distance and the resultant maximum arrest force. May 18, 2000

This sub clause does not allow for equivalencies - the use of another standard would require a deviation (Feb. 1, 2004)

(c) prevent a free fall greater than 1.22 m where

(i) the fall arrest system is not equipped with a shock absorption system that complies with CSA Standard Z259.11-M92, "Safety Belts and Lanyards", and that reduces the shock level of any fall to less than 4 kN; or

(ii) the combined free fall and shock absorbed deceleration distance exceeds the distance between the work area and a safe surface; and

Free fall distance is the actual distance fallen. It is the measurement between a harness' D-ring before and after a fall. Note that a 1.22m(4') lanyard attached at any point below the D-ring(shoulder level) will create a free fall distance of between 1.22m(4') and 2.44m(8'). Therefore, unless a 1.22m lanyard is attached level with or above the users D-ring, a shock absorber must be used in the fall arrest system. May 18, 2000

Shock absorbers are the braking components of the fall arrest system, designed to begin absorbing the force of the fall when the other components of the fall arrest system have deflected/tightened and the fall begins to be stopped. As a result, shock absorbers lower the maximum arrest force on the user's body during arrest of the fall, lessen or prevent damage to other fall arrest system components and lower the force acting on the fall arrest system anchor point(s). May 18, 2000

The maximum arrest force is controlled primarily through elongation of the shock absorber, therefore, the user of a fall arrest system incorporating a shock absorber must anticipate and consider the increase in total fall distance due to deployment of the shock absorber. Failure to consider this increase in total fall distance may result in the user striking the ground or other safe surface prior to full deployment of the fall arrest system. Manufacturers specifications outline the maximum allowable free fall distance and the maximum arrest force on the user from the deployment of the particular shock absorber. May 18, 2000

(d) include a full body harness that

(i) is attached to a lanyard,

(ii) is adjusted to fit the user of the harness, and

(iii) complies with CSA Standard Z259.10-M90, "Full Body Harnesses".

Full body harnesses are made primarily of straps for containment of the torso and pelvic area (optionally the waist area) designed to support the user during and after the arrest of an accidental fall. Frequency of inspection by a competent person is outlined in the harness manufacturers specifications. These inspections are in addition to the inspection by a competent person as required by Section 8(5) of these regulations. May 18, 2000

(2) A lifeline in a fall arrest system shall

(a) be made of

(i) polypropylene rope with a nominal diameter of at least 16 mm, or

Polypropylene ropes with UV inhibitors are recommended where the lifeline may receive extended exposure to sunlight. May 18, 2000

(ii) other durable material that provides at least equal protection to the user as polypropylene rope with a nominal diameter of at least 16 mm;

Breaking strength of lifelines shall not be less than 26.7kN(6000lbs) as required by Section 8(2)(j) CSA Standard Z259.2-M1979, "Fall Arresting Devices, Personnel Lowering Devices and Life Lines". May 18, 2000

(b) extend to a safe surface;

Lifelines must be of sufficient length to access a safe surface below the work area so workers may enter and exit the equipment safely. May 18, 2000

(c) be secured at the base to prevent tangling or disturbance of the line;

Lifelines shall be secured or weighted at the base which will allow the rope grab to travel freely on the lifeline. Lifelines shall also be protected from entanglement above and below the user. Excess rope shall be lined out so as to prevent an increase in free fall distance. May 18, 2000

(d) be securely attached to an anchor point;

Anchor points should be located directly above the worker so as to prevent any swing-fall or pendulum effect on the worker in the event of a fall. Rope guides may be used to dampen or prevent a lifeline from swinging. May 18, 2000

See Appendix M for diagram showing the pendulum effect. November 28, 2000.

Recommended means of attachment to the anchor point is with a shackle or karabiner which connects the manufacturer's spliced loop to the anchor point. May 18, 2000

(e) be free of knots, lubricants and imperfections;

(f) be free of splices, except as are necessary to connect the lifeline to an anchor point;

(g) be provided with softeners at all sharp edges or corners to protect against cuts or chafing;

Softeners include manufactured items, rubber hose, carpeting etc. and are required where the lifeline may become damaged. May 18, 2000

(h) be protected from corrosion;

(i) be used by no more than one person at a time;

Note that only one person may be attached to a vertical lifeline at any one time. May 18, 2000

(j) comply with CSA Standard Z259.2-M1979, "Fall Arresting Devices, Personnel Lowering Devices and Life Lines";

The standard makes no reference to screw lock or spring carabiners - either can be used if it meets the criteria of clause 4.1.5 of the standard (Feb. 1, 2004)

(k) be clearly identified as a lifeline by colour or by another means that provides an equivalent level of safety; and

(l) not be used for other purposes.

Lifelines must only be used as such. The practice of hoisting material with lifelines and lashing swing stages to structures with lifelines is prohibited. May 18, 2000

(3) Despite clause (2)(a), where a lifeline may be damaged by heat or corrosive material, it shall be made of wire rope that has a diameter of at least 8 mm.

Shock absorbing lanyards should be used with wire rope lifelines. May 18, 2000

(4) A ropegrab used in a fall arrest system shall comply with CSA Standard Z259.2-M1979, "Fall Arresting Devices, Personnel Lowering Devices and Life Lines".

(5) Each component of a fall arrest system, including each lifeline, shall be inspected by a competent person prior to each use to determine whether there are any defective, or otherwise unsafe components and if a defect is observed, no person shall use or permit the use of the system until the defective components are replaced or repaired.

The inspection required prior to each use is to identify defects in the fall arrest system. Items to look for include cut or damaged rope and webbing, bent rivets, worn or broken stitching, loose splices, broken strands, broken or improperly functioning hardware, frayed material, evidence of exposure to heat or corrosive chemicals including certain paints and any other wear and tear that may adversely affect the integrity of the fall arrest system. Identified defects are to be repaired by the manufacturer or authorized agent, and/or components replaced prior to further use of the fall arrest system. May 18, 2000

(6) A fall arrest system that has arrested a fall shall

(a) be removed from service and

inspected by a competent person; and

(b) be repaired to the original manufacturer's specifications or destroyed, when a defect is observed.

(7) A static line shall have a nominal diameter of at least 12.7 mm and shall

(a) be equipped with vertical supports at least every 9 m;

Vertical supports provide control and stability to the static line. It is recommended that only one fall arrest system be attached between any two supports so as to prevent the force of an arrested fall from impacting upon an adjacent worker between the same two supports. May 18, 2000

(b) have a maximum deflection, when taut, of no greater than 381 mm for a 9 m span;

Maximum deflection of a tensioned static line is 381mm(15") for a 9.0m(30') span. This configuration allows the static line to absorb a portion of the fall forces, reducing the maximum arrest force imposed on the worker and also reducing the maximum arrest load imposed on the system components. May 18, 2000

(c) be equipped with turnbuckles or other comparable tightening device that provides an equivalent level of protection, at the ends of the line;

Turnbuckles may be used to configure a static line's deflection and to tension a static line. Caution must be exercised not to over-tension a static line as this may reduce a static lines' ability to absorb a portion of the fall forces. May 18, 2000

(d) be made of Improved Plow Wire Rope;

Improved Plow Wire Rope may be referred to as EIPS (Extra Improved Plow Steel) in industry and is required for its high strength and resistance to damage. May 18, 2000

(e) be equipped with softeners at all sharp edges or corners to protect against cuts or chafing; and

(f) be made only of components that are able to withstand either the maximum load likely to be imposed on the components or a load of 8 kN, whichever is greater.

Static line components shall be able to withstand a minimum load of 8kN(1800lb). Static line systems impose much greater loads on their anchor points than vertical lifelines, therefore, allowances shall be made for these increased anchor point loads. May 18, 2000

The anchor point of a static line may be used as the anchor for tie backs for outriggers as long as the anchor point is designed to withstand the maximum

force that may be applied, plus the appropriate safety factor as determined by design. May 23, 2001.

(8) Despite subsections (1), (2), (3), (4) and (7), a fall arrest system for arborists shall

(a) include an approved tree climbing or tree trimming harness or saddle;

(b) be adequately secured to

(i) an anchor point, or

(ii) a lifeline that is

(A) securely fastened to an anchor point, or

(B) attached to a static line that is securely fastened to an anchor point;

(c) include an approved climbing rope or safety strap;

(d) where practicable, include a second approved climbing rope or safety strap that

(i) provides additional stability, and

(ii) back-up fall protection; and

(e) be capable of withstanding either the maximum load likely to be imposed or a load of 17.8 kN, whichever is greater.

(9) Arborists shall

(a) before climbing

(i) visually assess the structural stability of the tree,

(ii) select and assess the safest path of ascent, and

(iii) select an appropriate crotch

position as a work area;

(b) work, wherever practicable, from a crotch position, with a fall arrest system secured to an anchor point above the crotch position;

(c) when changing crotch positions, remain secured by a fall arrest system to the anchor point for the previous crotch position until secured by a fall arrest system to the anchor point for the next crotch position;

(d) not change crotch positions without selecting the next crotch position in advance;

(e) ensure that slack in ropes or lines that are part of the fall arrest system, if any, is

  (i) essential to the performance of the work, and

  (ii) no greater than is consistent with the safe performance of the work;

(f) not climb above the anchor point unless secured by another fall arrest system secured at or above the level of the arborists;

(g) not work in crews of less than two, one member of which shall remain on the ground; and

(h) when transferring from a power operated work platform to a tree, remain attached by way of fall arrest system to an anchor point on the platform until secured by way of fall arrest system to an anchor point on the tree.

Guardrails

9 (1) A guardrail shall be provided,

Fall protection provided by guardrails is required around floor openings and at the perimeter of all floors and other work areas. Guardrails warn of a fall hazard and act as a means of travel restraint to reduce the risk of a fall. May 18, 2000

(a) around an uncovered opening in a floor or other surface;

All openings must either be covered or have guardrails provided. May 18, 2000

(b) at the perimeter or other open side of

(i) a floor, mezzanine, balcony or other surface, and

(ii) a work area,

where a person is exposed to the hazard of a fall described in subsection 7(1).

(2) A guardrail shall be constructed or installed

(a) with posts that

(i) are spaced at intervals of not more than 2.4 metres, and

2.4m = 8' May 18, 2000

(ii) are secured against movement by the attachment of the posts to the structure under construction or that is otherwise being worked on, or by another means that provides an equivalent level of safety;

(b) with a top railing that is between .91 and 1.06 m above the surface of the protected working area and that is securely fastened to posts secured in compliance with subclause 9(2)(a)(ii);

0.91m(36") -1.06m(42") May 18, 2000

(c) with a toeboard, securely attached to the posts and the structure to which the posts are secured, extending from the base of the posts to a height of 102 mm; and

Toeboards are required to prevent tools and material from falling below. May 18, 2000

See Appendix I for diagram of toeboards. November 28, 2000.

(d) with an intermediate railing on the inner side of the posts midway between the top railing and the toeboard.

Intermediate rails are installed midway between the toeboard and the top rail. May 18, 2000

(3) A guardrail consisting of wood shall, in addition to the requirements of subsection (2),

(a) have top and intermediate railings and posts that are at least 51 mm x 102 mm;

Dressed lumber referred to as a "2 x 4" is the minimum acceptable size for these rails. May 18, 2000

(b) have a toeboard that is at least 25 mm x 75 mm; and

(c) be made of Number One Grade spruce or other lumber that provides an equivalent level of safety.

(4) A guardrail consisting of wire rope shall, in addition to the requirements of subsection (2),

(a) have wire rope railings that are at least 8 mm thick;

8mm = 5/16" May 18, 2000

(b) be identified with high visibility markings placed every 1.5 m on the top railing; and

The use of flagging tape or similar material is acceptable to indicate the presence of these narrow guardrails. May 18, 2000

(c) have railings with turnbuckles or other means that provide adequate tension to ensure an equivalent level of protection to that provided by a wooden guardrail.

Wire rope guardrails shall be tensioned to provide an equivalent level of protection that would be provided by a wooden guardrail. May 18, 2000

(5) A manufactured guardrail may be used in place of a wooden or wire rope guardrail if it provides an equivalent level of protection to that provided by a wooden guardrail.

(6) No guardrail is required around an opening in a floor or other surface if the opening is covered with fastened planks, plywood or other material where the covering

The size and type of material used to cover an opening will depend on the opening's dimensions and anticipated use. May 18, 2000

(a) is capable of supporting four times the maximum load likely to be imposed;

(b) is secured to prevent lateral and upward movement; and

(c) is identified by a sign that warns of the potential hazard.

Personnel safety nets

10 (1) Where used as a means of fall protection, a personnel safety net shall

(a) be installed not more than 4.6 m below the work area; and

A personnel safety net shall be installed as close as possible (4.6m(15') maximum) to the persons working above with no intervening members or obstructions between the work area and the net. May 18, 2000

(b) where another means of fall protection meeting the requirements of Section 7 is not used, extend 2.4 m on all sides beyond the work area.

If the personnel net is the only means of fall protection, then the net must extend 2.4m(8') beyond the entire work area. May 18, 2000

(2) A personnel safety net shall be manufactured, used, maintained, inspected and stored in accordance with ANSI standard A10.11-1989, "Safety Nets Used During Construction, Repair and Demolition Operations".

The maximum centre to centre spacing of netting is 150mm(6"). May 18, 2000

(3) Despite subsection (2),

(a) a personnel safety net shall be installed and maintained so that the maximum deflection when arresting the fall of a person does not allow any portion of the person to contact another surface;

(b) the splice joints that connect two or more safety nets shall be equal or greater in strength to the nets; and

(c) there shall be no obstructions or intervening members that may be struck during a fall between the work area and the personnel safety net.

Debris nets

11 (1) Where persons having access to an area below an elevated work area are exposed to the hazard of falling objects from the work area, a debris net, or other means of protection that provides an equivalent level of protection from falling objects and debris, shall be used.

Debris nets are intended to catch small, light weight construction debris, thereby providing overhead protection to persons below an elevated work area. May 18, 2000

(2) A debris net shall be

(a) manufactured, used, maintained, inspected and stored in accordance with ANSI standard A10.11-1989, "Safety Nets Used During Construction, Repair and Demolition Operations"; and

(b) despite clause (a), installed not more than 4.6 m below the elevated work area.

If a personnel net and a debris net are to be used together, the debris net must be secured on top of the personnel net. A competent person determines the nature of the debris that may fall and therefore the size and type of mesh to be used. The mesh must not allow the penetration of debris and must not compromise the performance of the personnel net. Further, a debris net containing debris may not be considered a safe surface if the debris may cause injury to a person in the event of a fall. May 18, 2000

4.6m = 15' May 18, 2000

12 One net may be used for the purpose of a personnel safety net and a debris net if it meets the requirements specified in these regulations for personnel safety nets.

Safety belts

13 A safety belt used as a means of fall protection shall comply with

(a) CSA Standard Z259.1-1995, "Safety Belts and Lanyards; or

(b) CSA Standard Z259.3-M1978, "Lineman's Body Belt and Lineman's Safety Strap".

Safety belts used as fall protection are for work positioning or as travel restraint to prevent a person from accessing an area where a fall may occur. Safety belts are never to be considered part of a fall arrest system. May 18, 2000

Temporary flooring

14 (1) Where temporary flooring is used, it shall be installed at each floor level where work is in progress.

Temporary flooring may be used in structures such as bridges and buildings to provide stable support for workers as a work platform. May 18, 2000

(2) Temporary flooring shall,

(a) except for any openings necessary for the carrying out of work, extend over the whole work area;

Openings necessary for the carrying out of work shall require other means of fall protection as required by Section 7. May 18, 2000

(b) be able to withstand four times the maximum load likely to be imposed on it; and

(c) be securely fastened to and supported on members that are able to withstand four times the maximum load likely to be imposed.

Risk of drowning

15 (1) A personal floatation device shall comply with CGSB standard CGSB 65.11-M88, "Personal Floatation Devices".

The personal floatation device(PFD) must be appropriately chosen and sized for the user's body and the intended work activity. May 18, 2000

Persons protected by fall protection do not require the items in subsection (2) as the risk of drowning does not exist. May 18, 2000

(2) Where a person is exposed to the hazard of falling from a work area and there is a risk of drowning

(a) a personal floatation device shall be worn where the work area is less than 3 m above the surface of the water;

Where the work area is 3.0m or greater above the water, fall protection requirements must be in place and PFD's are optional. PFD's are only required at heights less than 3.0m and where the water is deep enough to keep a worker afloat. Further, fall protection may be required where the height is less than 3.0m and a person is above a surface or thing that could cause injury to the person upon contact. May 18, 2000

(b) rescue equipment shall be provided that includes

(i) an adequate motor boat to ensure a safe and timely rescue,

Rescue equipment such as a motorboat is only required where the boat is able to operate. Other rescue equipment is still required if the water is not of sufficient depth for the operation of the motor boat. May 18, 2000

(ii) a life buoy with 15 m of polypropylene rope that is at least 10 mm in diameter or that is made from material that provides an equivalent level of protection,

15.0m=50.0', 10mm=3/8" May 18, 2000

(iii) a boat hook,

(iv) an audible alarm system to notify of an accident and to initiate the rescue procedure; and

Audible alarm systems include air horns, sirens and whistles. May 18, 2000

(c) persons who are

(i) designated to perform specific

rescue tasks,

(ii) properly informed as to the proper rescue procedures, and

(iii) trained in the use of the rescue equipment in order to perform rescue operations safely,

shall be available in such numbers as are needed in the circumstances to perform rescue operations safely.

(3) Where work is being done above water that has a fast current and where practicable, a line shall be placed across the water

(a) that is made of polypropylene rope that is 10 mm in diameter or material that provides an equivalent level of protection; and

(b) that has buoys or some other floatation device attached.

The presence of river and tidal currents will require a floating line to be placed across the water, a sufficient distance from the work area that will aid in rescuing a worker who has fallen into the water. Tidal currents may require a line to be placed both upstream and downstream from the work area. May 18, 2000

The presence of boating traffic should be considered when deciding on the placing of lines and buoys. May 18, 2000

(4) For greater certainty, subsection (2) does not apply where persons are protected by fall protection in accordance with subsection 7(1).

Building shafts

16 Where there is no work platform installed at the level of a doorway or opening in a building shaft, the guardrail that is installed in accordance with these regulations shall be marked with a warning sign that indicates the presence of an open building shaft.

Openings to elevator shafts require warning signs, in addition to guardrails, indicating the hazard present.
May 18, 2000

Roof work

17 (1) Where work is being done from or near the edge of a roof that has a slope of less than 3/12 in circumstances described in subsection 7(1), fall protection shall be provided, in accordance with Section 7.

Near the edge of a roof is interpreted to be within 1.0m (3.3') of the roof edge. This 1.0m dimension may be increased based on the fact circumstances that an officer observes and depending on the surface conditions present. The method of providing fall protection for these roof slopes is to be determined by the workplace parties. May 18, 2000

(2) Where work is being done from or on a roof that has a slope that is greater than or equal to 3/12 but less than 6/12, under circumstances described in subsection 7(1), a fully decked scaffold or roof brackets and planks shall be installed at the base of the roof.

Where there is a risk of a fall of more than 3m and the slope of the roof is more than 3/12 but less than 6/12, the employer can choose from the options for fall protection the regulation permits in Section 7(1). For example, an employer may use a fall arrest system or a fully decked scaffold, but is not required to use both. November 28, 2000.

(3) Where work is being done from a roof that has a slope that is greater than or equal to 6/12 but less than 9/12, under circumstances described in subsection 7(1), roof brackets and planks shall be installed as work progresses on the roof.

Roof brackets and planks are to be installed as work progresses on the roof slopes indicated in subsection 17(3). Sufficient brackets and planks below the active work area are to remain in place until the roof work is completed. In instances where it is not technically possible to install roof brackets, an application for a deviation can be made. May 18, 2000

(4) Where work is done from the edge of a roof that has a slope that is greater than or equal to 3/12 but less than 9/12, under circumstances described in subsection 7(1), then in addition to the requirements of subsection (2) or (3), a fully decked scaffold work platform or a fall arrest system shall be used.

Work performed within 1.0m (3.3') of the roof edge requires the additional protection of a fall arrest system or the installation of a fully decked scaffold work platform. A fully decked scaffold work platform means that the entire width of the scaffold is effectively covered. A fully decked scaffold work platform doe not necessarily meet the definition of "safe surface". This should be kept in mind when determining fall protection requirements. May 18, 2000

(5) Where work is done from or on a roof that has a slope greater than or equal to 9/12, under circumstances described in subsection 7(1), a fully decked scaffold work platform, roof brackets with planks and a fall arrest system shall be provided in

Work performed on all roofs with slopes greater than or equal to 9/12 requires a fully decked scaffold work platform at the base, sufficient roof brackets with planks and a fall arrest system to be in place and used at all times. In instances where it is not technically possible to install roof brackets, an application for a

accordance with these regulations.	deviation can be made. May 18, 2000 Requirements in 17(4) and (5) are mandatory for all roofs including those that are finished and are just being repaired or worked off of (Feb. 1, 2004) Section 17 sets out a series of requirements for different roof slopes - there are no equivalencies - anything other than what is noted in the section will require a deviation (Feb. 1, 2004)

PART III: SCAFFOLDS AND WORK PLATFORMS

Use and loading of scaffolds

18 (1) Where work cannot be performed in a safe manner from the ground or other safe surface, a scaffold or other means of support that provides an equivalent level of safety shall be provided.

Scaffolds include all elevated work platforms and all suspended work platforms including the supporting components. Scissor lifts, telescopic and articulated booms, boatswain's chairs, fork-lift platforms and man-baskets are all scaffolds. May 18, 2000

(2) No scaffold shall be

(a) loaded in excess of its rated capacity; or

(b) operated or supplied in the absence of the manufacturer's specification or the professional engineer's design required by these regulations; or

Clause 18(2)(b) means that a scaffold must, where commercially manufactured, be supplied with a manufacturer's specification. If the scaffold is not commercially manufactured and the regulation requires the scaffold to have a certified design by a professional engineer, the scaffold must have a certified design supplied with the scaffold. Dec. 5, 1996. May 18, 2000

(c) used to support a ladder or other structure or device for the purpose of increasing the scaffold's working height or area.

Scaffolds must be constructed to the proper height to perform the work, increasing the height by other means is prohibited. Bridging between separate scaffolds ie. Installing platforms between scaffolds without proper vertical and horizontal bracing connecting the scaffolds together as one is prohibited. May 18, 2000

(3) Ladderjack scaffolds and wooden carpenter's portable bracket scaffolds are prohibited in all workplaces.

Materials to be used in work platforms

19 A work platform shall consist of

(a) wooden planks that are

(i) No. 1 grade or better spruce that are 51 mm thick rough and 254 mm wide rough,

(ii) free of decay, large knots, splits, warps or other defects, and

(iii) not painted so as to prevent the identification of possible defects; or

Wooden planks used as work platforms must be a full 51 mm(2.0") thick and 254 mm(10.0") wide. May 18, 2000

(b) a commercially manufactured platform of equivalent strength to the wooden planks described in clause (a).

Manufacturers specifications should be consulted to obtain a platforms rated capacity, most commercially manufactured platforms have a capacity of 366kg/m^2(75 lbs/ft^2) and may be considered heavy duty. May 18, 2000

Work platforms: design and construction

20 (1) A work platform shall be

(a) designed, constructed and maintained to support, without exceeding the allowable unit stresses for the materials used, four times the maximum load likely to be imposed on the work platform;

(b) 458 mm or more in width; and

Work platforms must be a minimum of 458 mm (18.0") in width. May 18, 2000

(c) securely fastened in place so as to prevent movement by cleating or wiring or such other means of fastening as provides an equivalent level of safety.

Common methods of fastening include wiring or cleating. Cleating is the installation of sufficiently sized cross pieces beneath the platform to prevent longitudinal movement of the platform. Commercially manufactured platforms use hooks and sliding tabs to prevent longitudinal movement. May 18, 2000

(2) Where a platform is made of planks, each plank in the platform shall

(a) extend at least 152 mm and not more than 305 mm beyond the supporting members; and

Planks must extend at least 152 mm(6.0") but not more than 305 mm(12.0") beyond the support. May 18, 2000

(b) be laid flat with an overlap at each end of 305 mm with a plank in any adjoining platform, with the centre of the overlap directly over a supporting member; and

Overlapping planks must have 305 mm(12.0") of lap with the centre of the overlap directly over the support below. May 18, 2000

(c) be of the same length where

(i) it is practical, and

(ii) work platforms are linked.

The practice of using planks of identical length creates an even elevation change and minimizes the tripping hazard of overlapping planks. May 18, 2000

Scaffolds: design and construction generally

21 A scaffold erected from the ground or other safe surface shall be

(a) erected plumb and level;

Screwjacks (levelling legs) for metal scaffolds are required to plumb and level the scaffold initially and also to make adjustments to the scaffold if settlement has taken place. Maximum extension of screwjacks is determined by the manufacturer, 300mm(12") is generally the maximum allowed. May 18, 2000

CAN/CSA-S269.2-M87 "Access Scaffolding for Construction Purposes" establishes tolerance limits for variation from plumb. Limits are- 12mm(0.5") in 3.0m(10'), 19mm(0.75") in 6.0m(20') and 38mm(1.5") in the total height of the scaffold. Note that this standard is referenced for information purposes only and is not part of this regulation. May 18, 2000

(b) constructed with vertical supports that

(i) rest upon a firm footing that can support the maximum load of the scaffold without unsafe settlement or deformation, or

(ii) where there is no firm footing, rest upon mud sills that prevent unsafe settlement, deformation or tipping;

Firm footing may include asphalt or concrete pavement, consolidated ground or a structure capable of withstanding the loads imposed. Vertical supports require adequate wheels and castors or base plates/levelling legs for adequate distribution of loads to the bearing surface below. Mud sills may be required on unconsolidated ground or any ground with unknown bearing capacity. The base plates/levelling legs of the scaffold should bear on the centre of the mudsill which should run continuously between any two consecutive scaffold legs. Joints between consecutive mud sills should be located a minimum of 600 mm(2.0') from each scaffold leg to adequately distribute the scaffold loading to the soil. Adequately sized smaller sills may be permitted on uneven ground for adequate distribution of the load to the soil. May 18, 2000

See Appendix I for diagram including mud sills. November 28, 2000.

(c) constructed of components that are adequately secured to prevent lateral

Tie locations will vary depending on the particular

movement and in any event, by at least one tie for each

(i) 4.6 m vertical interval, and

(ii) 6.4 m horizontal interval;

conditions. Scaffolds should initially be tied at their perimeters ie. at the ends and highest points of the scaffold, the balance of the ties can then be located within the scaffold at the required 4.6m(15.0') vertical and 6.4m(20.0') horizontal intervals. Ties should be of the push/pull type that will anchor the scaffold against movement in any direction. Double #9 form wire, looped and twisted is the minimum acceptable tie wire permitted for tensioning. May 18, 2000

(d) braced diagonally in the vertical and horizontal planes to prevent lateral movement, except that one diagonal brace may be removed where other comparable precautions are taken to ensure the stability of the scaffold;

Horizontal bracing should be located at the same level as the ties resulting in the strongest configuration. If possible the horizontal braces should tie-in directly at the point at which the scaffold is tied to the structure to distribute any lateral loading to the structure. May 18, 2000

See Appendix I for an example of vertical and horizontal bracing. November 28, 2000.

(e) installed and constructed by a competent person to secure the scaffold against lateral movement where the scaffold is enclosed;

Enclosed scaffolds shall be installed and constructed by a competent person to ensure the structural integrity of the scaffold. This exceeds other requirements where the erection and dismantlement of other scaffolds be supervised by a competent person. May 18, 2000

(f) constructed of vertical supports and bearers that are no greater than 3 m apart.

Maximum span between vertical supports and bearers(members upon which work platforms bear) is 3.0m(10'). The span between the bearers and the load imposed will determine the work platform/planking requirements. May 18, 2000

Scaffolds: capacity, access and egress, and fittings

22 Every scaffold shall

(a) be capable of supporting at least four times the maximum load likely to be imposed;

(b) have a safe means of access and egress; and

Scaffold manufacturers specifications should be consulted for information on scaffold access. See Sections 147 - 152 *Occupational Safety General Regulation* for the requirements for fixed and portable ladders. May 18, 2000

(c) be provided with fittings and gear that comply with the manufacturer's specifications or a professional engineer's design.

Fittings and gear include base plates, levelling legs, bracing, coupling/connecting devices, locking mechanisms, guardrails, access ladders, wheels and castors. May 18, 2000

Inspections and supervision by competent person

23 (1) Every scaffold shall be inspected by a competent person each day prior to use, for defects, damage, deterioration or loosening that may affect its strength and if such defect, damage, deterioration or loosening is found, the scaffold shall not be used until repaired or, where necessary, replaced.

Scaffold inspections should identify any damage to frames, braces and other structural components, push/pull tie integrity, broken hooks/cleats on platforms/planks, levelling leg settlement, splits or dry rot in planks, compatibility of parts and an adequate supply of all components required. May 18, 2000

Clause 23(1) and (2) apply to all scaffolds, regardless of height (Feb. 1, 2004)

(2) The erection and dismantling of every scaffold shall be supervised by a competent person.

The competent person supervising the scaffold erection and dismantlement shall consider items that may affect the scaffolds' integrity. Items to consider include ground conditions such as elevation changes, floor or soil bearing capacity and freeze/thaw effect, proximity of overhead wires, tie-in locations and methods and any other obstructions affecting the scaffold such as construction material and debris. May 18, 2000

For scaffolds on the exterior of a building, a foundation should be prepared, including compacting loose soil, providing protection against erosion from rain or thawing, placement of mudsills and replacing mud and soft ground with gravel or crushed stone. Dec. 5, 1996.

A scaffold should be dismantled in reverse order to erection. Materials should be properly lowered from a height, not thrown down; small fittings should be placed in boxes or containers and scaffold materials should be stored as quickly as possible. Dec. 5, 1996.

Professional engineer's certification

24 (1) The design of a scaffold used in the workplace shall be certified by a professional engineer, where

(a) the scaffold is a pumpjack scaffold that is greater than 9.75 m in height, and has one or more members that are not commercially manufactured for the purpose for which they are used;

Section 29-Pumpjack Scaffolds, contains requirements for manufactured scaffolds. May 18, 2000

9.75m = 32.0 ft May 18, 2000

(b) the scaffold is a wooden scaffold that is greater than 9.75 m in height;

9.75m = 32.0 ft May 18, 2000

(c) the scaffold is a suspended scaffold that

Section 30- Suspended Scaffolds, contains requirements for manufactured scaffolds. May 18, 2000

(i) has one or more supporting members that are not commercially manufactured for the purpose for which they are used,

(ii) is used in a manner that exceeds the manufacturer's rated load, or

(iii) has two work platforms that are

(A) linked, or

(B) tiered on one suspended scaffold;

(d) the scaffold is a cantilevered scaffold that

See Section 35- Cantilevered Scaffolds also contains requirements for these scaffolds. May 18, 2000

(i) extends more than 1.22 m from the edge of the bearing surface, or

1.22 m = 4.0 ft May 18, 2000

(ii) has an inboard portion of an outrigger, from the fulcrum point to the anchor point, that is less than 1.5 times the length of the outboard portion of the outrigger; (e) the scaffold is greater than 15 m above the foundation on which it is based;

(f) the scaffold is a crane supported work platform with one or more supporting members that are not commercially manufactured for the purpose for which they are used;

15.0m = 49' 2" May 18, 2000

(g) the scaffold is a fork-lift platform with one or more supporting members that are not commercially manufactured for the purpose for which they are used; or

Section 37-Crane Supported Work Platforms, contains requirements for manufactured scaffolds. May 18, 2000

Section 34-Fork-lift Platform, contains requirements for manufactured scaffolds. May 18, 2000

(h) an officer determines that extraordinary conditions, including, but not limited to, wind and elevation conditions, require a professional engineer's certified design to ensure the adequacy of the scaffold.

Commercially manufactured wood pallets shall not be used as fork-lift platforms. May 18, 2000

(2) Where a professional engineer's certified design of a scaffold is required, the scaffold shall be erected, used, maintained and dismantled in accordance with the certified design.

(3) Where a professional engineer's certified design of a scaffold is required, an officer may request a professional engineer's certification that a scaffold has been erected and maintained in accordance with the certified design.

Conditions that may require consideration for certification include proximity to vehicle traffic at highway speeds and the hoarding or tarping of scaffolds- either partially or fully enclosed, resulting in greater wind and weather loading on the scaffold. May 18, 2000

Certified designs must include instructions on the erection, use, maintenance and method of dismantling the scaffold. Changes or alterations to the design or construction of a scaffold shall be included in the final certified design. A copy of the certified design is to be available with the scaffold. May 18, 2000

Protection from falling objects

25 Where work is being performed on a scaffold above a work area to which access is not restricted, persons below shall be protected from the hazard of objects falling from the scaffold by

(a) overhead protection;

(b) the tying of tools and other unsecured objects on the scaffold; or

(c) other means that provide an equivalent level of safety to overhead protection.

Scaffold stability and movement

26 (1) Subject to clause 36(11)(e), where work is being done from a scaffold, the scaffold shall not be moved horizontally while

(a) a person; or

(b) unsecured tools, material or equipment,

are on the scaffold.

Clause 36(11)(e) allows power operated elevating work platforms to be moved horizontally while a person is on the platform and protected by a fall arrest system attached to an anchor point on the platform. May 18, 2000

(2) No work shall be done from a scaffold during erection or dismantling of the scaffold unless

(a) the work area on the scaffold complies with these regulations; or

(b) the persons performing the work are protected by a means of fall protection that complies with these regulations.

Fall protection shall be in place at all times during the erection and dismantling of scaffolds when the worker is at a height of 3.0m(10') or greater above a safe surface. May 18, 2000

(3) To prevent tipping, a free standing scaffold that is at least three times higher than its minimum base dimension shall be equipped with guy wires, outrigger stabilizers or such other means of support that provide an equivalent level of safety.

Free standing scaffolds whose work platforms have reached a height equal to three times the minimum base dimension shall be equipped with guy wires or stabilizers to prevent tipping. An equivalent level of safety may be provided by lowering the work platform below this height so long as the scaffold's frames or guardrail height does not exceed the height/minimum base dimension ratio. May 18, 2000

(4) A scaffold shall not be used when there is a severe weather condition which may create a hazardous situation.

Scaffolds shall not be used in severe weather conditions which may include high winds, heavy rain, the threat of lightning and freezing conditions. May 18, 2000

Metal scaffolds

27 A metal scaffold shall

(a) subject to clause (b), be erected, used, maintained and dismantled in accordance with the manufacturer's specifications, or in accordance with a professional engineer's design that includes instructions on erection, use, maintenance and dismantlement;

Manufacturers specifications shall be consulted and adhered to for all metal scaffolds. Bracing requirements vary between frame, system and tube and clamp systems. In general, all systems require vertical bracing at every level and horizontal bracing every 4.6m(15') including the base level. Bridging between separate scaffolds ie. installing platforms between scaffolds without proper vertical and horizontal bracing connecting the scaffolds together as one is prohibited. May 18, 2000

(b) despite clause 21(c) and (d), be braced diagonally in the vertical plane, at every level and on each side, and in the horizontal plane, at every 4.6 m;

(c) have components that are securely fastened with locking mechanisms, as designed by the manufacturer or a professional engineer, both during erection and otherwise; and

Locking mechanisms are required on all metal scaffolds to prevent components from separating. These locks are required on braces, frames, posts, bearers, ledgers, coupling devices, baseplates, manufactured platforms and guardrail ends etc. May 18, 2000

(d) be equipped with screwjacks where necessary to ensure that the scaffold is plumb and level.

Screwjacks(levelling legs) are required to plumb and level the scaffold initially and also to make adjustments to the scaffold if settlement has taken place. Maximum extension of screwjacks is determined by the manufacturer, 300mm(12") is generally the maximum allowed. May 18, 2000

Rolling scaffolds

28 (1) A rolling scaffold shall

(a) be equipped with

(i) suitable braking and locking devices, and

(ii) a mechanism that, when applied, secures the wheels of the scaffold; and

(b) be assembled

(i) with horizontal cross-bracing starting at the base and at 4.6 m vertical intervals, and

(ii) from components that are securely fastened with locking mechanisms, as designed by the manufacturer or a professional engineer, during assembly.

Rolling scaffolds should be used on level surfaces with adequate bearing capacity. The use of pneumatic tires requires blocking of the frames and/or the use of levelling devices to ensure that tire failure will not compromise the scaffolds stability. May 18, 2000

Horizontal cross-bracing (plan bracing) is required at the base of rolling scaffolds and at 4.6m(15.0') intervals thereafter to prevent the scaffold from coming out of square. May 18, 2000

Locking mechanisms are required between all components such as frames, braces, wheels and castors. May 18, 2000

(2) The braking and locking devices and the securing mechanism referred to subsection (1) shall be applied prior to and while a person is using the scaffold.

As required by subsection 26(3) any free standing scaffold (including rolling scaffolds) whose work platforms have reached a height equal to three times the minimum base dimension shall be equipped with guy wires or stabilizers to prevent tipping. Work platforms installed at lower elevations with frames or guardrails installed at heights exceeding this ratio will also require adequate stabilizing. May 18, 2000

(3) A rolling scaffold shall not be moved on an inclined surface unless adequate precautions are taken to prevent tipping, sliding, acceleration or any other dangerous or sudden movement.

Adequate precautions may include the removal of tools, planks and materials, levelling of rough sloping ground, cleaning of building floors and ramps and the use of mechanical devices to control the scaffold during its movement. May 18, 2000

Pumpjack scaffolds

29 (1) A pumpjack scaffold made of metal shall not be more than 13.7 m in height, and shall be braced every 4.6 m, starting at the base of the scaffold.

Maximum work platform height is 13.7m(45') for metal pumpjack scaffolds and 7.3m(24') for wood pumpjack scaffolds. Bracing of the poles is required at 4.6m(15') intervals for metal poles and at 3.0m(10') intervals for wood poles. Adequate bearing capacity for the poles must be available and a brace or other means of securing the poles at ground level is required to prevent lateral movement. May 18, 2000

(2) A pumpjack scaffold that includes one or more supports made of wood, shall not be more than 7.3 m in height and shall be braced every 3 metres, starting at the base of the scaffold.

(3) A pumpjack scaffold may be used as a light duty scaffold only and is not to be used by more than two people at one time.

ANSI A10.8-1998 American National Standard for Construction and Demolition Operations-Scaffolding-Safety Requirements, Section 21, "Pumpjack Scaffolds" contains details on suitable coupling methods for wooden poles but does not allow for splices to increase the length of any member. May 18, 2000

(4) Every pumpjack scaffold must be erected, used, maintained and dismantled according to the manufacturer's specifications, or in accordance with a professional engineer's design that includes instructions on erection, use, maintenance and dismantlement.

Pumpjack scaffolds require fall protection as per subsection 7(1)- if manufactured guardrails including at the ends of the scaffold are not in place, other fall protection requirements apply. The maximum recommended distance between the front of the work platform and the building is 300mm(1.0'). May 18, 2000

Suspended scaffolds

30 (1) If a suspended scaffold is commercially manufactured, it shall be erected, used, maintained and dismantled in accordance with the manufacturer's specifications.

(2) If a suspended scaffold is not commercially manufactured, it shall be

(a) operated in accordance with written operating procedures that are to be developed by the employer; and

(b) erected, used, operated and maintained in accordance with a professional engineer's design that includes instructions on erection, use, maintenance and dismantlement.

(3) Unless a suspended scaffold is a boatswain's chair, it shall be suspended by at least two upper attachments placed so that the suspension ropes are parallel.

Boatswain's chairs may be suspended by one upper attachment while work cages, swing stages etc. require a minimum of two upper attachments, spaced so as to allow the suspension lines to remain parallel. May 18, 2000

(4) Every suspended scaffold shall, during use, be tied to an outrigger, or, where an outrigger is impractical, a parapet clamp.

Parapet clamps are devices that attach to a roof parapet wall constructed of reinforced concrete or masonry. These devices rely on the strength of the parapet rather than counterbalance weights to withstand the load imposed by the suspended scaffold. May 18, 2000

(5) When not in use, a suspended scaffold shall be lowered to the ground or lashed to the structure to which it is attached.

The lashing of suspended scaffolds to structures with the workers lifelines or suspension lines is prohibited as these lines are not to be used for other purposes. May 18, 2000

(6) No suspended scaffold shall be moved up or down during use if the work platform of the scaffold is more than 10% out of level.

10% out of level is 5.7 degrees from horizontal. At no time shall this percentage out of level be exceeded. This includes the situation where one worker is operating both hoisting mechanisms at both ends of the scaffold. May 18, 2000

(7) Where a safe means of access and egress is not otherwise provided, a powered

A controlled descent device is a manual system that

suspended scaffold shall be equipped with a controlled descent device, other than a lifeline, for use in the event of a mechanical or power failure, that can be safely operated from the work platform and can move the scaffold to a point of safe egress.

allows the suspended scaffold to be lowered to a safe egress point in the event of power failure or other emergency. May 18, 2000

(8) Power units on a suspended scaffold shall be equipped with

(a) positive pressure controls; and

Positive pressure controls, when released, remove power from the powered climber. May 18, 2000

(b) positive drives

Positive drives require hydraulic, electric or pneumatic action to raise or lower the scaffold. May 18, 2000

for raising and lowering the scaffold.

(9) A manually operated suspended scaffold shall be equipped with a hoisting mechanism that has a secondary locking device that is securely locked in a positive drive position.

Manually operated suspended scaffolds (non-powered climbers) must have a secondary locking device in place to provide protection in case the primary hoisting system fails. These secondary locking devices automatically close on the rope and grip it with a degree of tightness determined by the imposed load when a sudden downward pull is exerted on the locking device. May 18, 2000

(10) Where two suspended work platforms are tiered on one suspended scaffold, the upper platform shall have at least two independent means of support arranged so that the failure of one support will not result in the collapse of the upper platform.

(11) Subject to clause (18)(a), all supporting members of a suspended scaffold, including outriggers, parapet clamps, anchor points, parapet and work platform must be able to withstand four times the maximum load likely to be imposed on them.

See clause 8(7)(f) for information on the use of a static line anchor point as an anchor point for the tie backs of outriggers. May 23, 2001

(12) Counterweights on a suspended scaffold must

(a) be securely attached to the outriggers;

(b) consist of solid material; and

Counterweights are required on suspended scaffolds outriggers to counterbalance the rated capacity of the scaffold. These counterweights shall be able to balance four times the load imposed by the scaffold. May 18, 2000

(c) be of sufficient weight to counterbalance four times the rated capacity of the scaffold.

(13) Where the outrigger of a suspended scaffold does not have an eye bolt, it shall be equipped with a positive stop device at the outer end of the outrigger that prevents the movement of the rope.

Outriggers are beams that extend beyond and at right angles to a building face to allow suspended scaffolds to travel vertically along a structure. Outriggers use counterweights to balance the load imposed by the suspended scaffold. These outrigger beams have strength limitations in addition to the counterbalance requirements and as such, have maximum projection lengths determined by the manufacturer that limit the allowable projection beyond the building face. May 18, 2000

(14) Outriggers on a suspended scaffold shall

(a) have printed on each component; or

(b) (have) otherwise accessible to the user,

the maximum load that may be imposed on the component.

(15) An outrigger used in a suspended scaffold shall not be made of wood or include components made of wood.

(16) Any outrigger or parapet clamp used on a suspended scaffold shall be tied to an anchor point so as to prevent movement of the outrigger or clamp.

Tieback cables are required on all outriggers and parapet clamps to prevent movement of the system components. Tieback cables for outriggers should start at the thimble of the suspension line, run back along the outrigger beam, with at least one half-hitch through the handles on each section, loop around the counterweight handles and extend on back to adequate anchorage. Tieback cables should have the same rated strength as the primary suspension line cable. Tieback cables for parapet clamps require similar arrangements with the exception of the counterweights which are not required. Tieback anchors should line up with the point of suspension if practical. May 18, 2000

(17) Where an outrigger on a suspended scaffold consists of more than one component, the components must be fastened and held together by at least two independent fastening and connecting systems so as to prevent the components

from separating.

(18) A rope used to suspend a work platform shall

(a) be able to withstand ten times the maximum load likely to be imposed on the rope;

Manufacturers specifications should be consulted for wire rope diameters as manually operated hoists and powered climbers require different wire rope types and diameters. May 18, 2000

(b) where made of wire, not be less than 7.8 mm in diameter;

(c) where made of polypropylene, not be less than 16 mm in diameter; and

16mm = 5/8" May 18, 2000

(d) in the case of a scaffold that can be moved upward and downward

(i) extend to the nearest safe surface, and

Suspension ropes must be of sufficient length to access a safe surface below the work area so workers may exit from the equipment safely. May 18, 2000

(ii) be secure from tangling or fouling.

Ropes must be secured at the base and kept clear of all hazards including live electrical conductors, vehicle and pedestrian traffic etc. which may affect the safety of the scaffold workers. May 18, 2000

(19) A fall arrest system, including a ropegrab and an independent life line, shall be used by all persons working on or from a suspended scaffold, and by all persons entering onto or leaving a suspended scaffold.

Workers must be attached to a fall arrest system prior to entering, while working from and while exiting a suspended scaffold. Anchor points should be located so as to prevent swing-fall or pendulum effects on the worker in the event of a fall. Rope guides may be used to dampen or prevent a lifeline from swinging. May 18, 2000

See Appendix K for a diagram of a fall arrest system with rope grab and independent lifeline on a suspended scaffold. November 28, 2000.

(20) Despite subsection (19), where a suspended scaffold has more than one means of support on each side of the work platform, either of which would prevent collapse of the scaffold in the event of the failure of the other, a fall arrest system that is attached to an adequate anchor point on the platform may be used.

Fall arrest systems may be attached to an anchor point on the platform if more than one independent means of support is in place on each side of the work platform and where the failure of one support will not result in the failure of the work platform. May 18, 2000

See Appendix K for a diagram of a fall arrest system attached to a platform on a suspended scaffold. November 28, 2000.

(21) Despite subsection (19), where the suspended scaffold has more than one means of support on each side of the work platform, either of which would prevent displacement of the work platform and falls by persons on the work platform in the event of the failure of the other, persons need not use a fall arrest system.

Fall arrest systems are not required where more than one independent means of support is in place on each side of the work platform and where the failure of one support will not result in any displacement of the work platform. May 18, 2000

(22) Where work is performed on a suspended scaffold, the work area below the platform shall

(a) be roped off, barricaded or provided with a means of overhead protection; and

(b) have highly visible warning signs posted to notify people of the overhead hazard.

Work areas below suspended scaffolds shall have a means of protection provided for anyone below. Warning signage shall also be provided in addition to the protection of the area. May 18, 2000

(23) All suspension lines, tiebacks, lifelines and other supporting components of a suspended scaffold that are made of rope, shall be protected from abrasions, corrosive substances, other foreign materials, heat or work activities that might damage the rope or internal hoist mechanisms.

Permanent powered suspension work platforms

31 (1) A permanent powered suspension work platform shall

(a) be installed, designed, constructed and maintained to perform safely any task required; and

(b) be certified as safe for use by a professional engineer

(i) after installation, and

(ii) thereafter, at least once per year.

(2) Written safe working procedures shall be developed by the employer for the users of each permanent powered suspension work platform.

(3) Every person using a permanent powered suspension work platform shall be trained in the proper use of the platform.

CAN/CSA Standard-Z271-98 "Safety Code for Suspended Elevating Work Platforms@- Section 8 contains requirements pertaining to permanently installed equipment. May 18, 2000

Bracket scaffolds

32 A bracket scaffold shall

(a) not have brackets more than 3 m apart; and

(b) be securely attached to the wall so as to prevent dislodging.

Bracket scaffolds are either suspended from or attached to a wall providing adequate support for a work platform. Typically of wood or metal construction these brackets are considered light duty. Adequate fastening includes wall through-bolting or welding to steel structures. May 18, 2000

Roofing brackets

33 Roofing brackets shall

(a) be erected and maintained to support four times the maximum load that is likely to be imposed on the brackets;

(b) be securely nailed to the roof; and

(c) have a span of no more than 3 m.

Roofing brackets and planks provide a worker with a surface from which to work. Some bracket systems may only require a single 51mm(2") x 254mm(10") plank and shall be secured to the roof in accordance with the manufacturers specifications. May 18, 2000

Fork-lift platform

34 (1) An industrial lift truck shall not be used to lift a fork-lift platform where

(a) the ground or other conditions at a workplace may affect the stability of the fork-lift platform; or

(b) the industrial lift truck is susceptible to tipping, displacement or other destabilization.

Fork-lift platforms are typically used in an industrial workplace where lift trucks operate on grade slabs or structural slabs. The use of fork-lift fork-lift platforms on construction projects is not recommended due to the uncertainty of ground conditions and soil bearing capacity. May 18, 2000

(2) A fork-lift platform shall

(a) be erected, used, maintained and dismantled in accordance with the manufacturer's specifications, or in accordance with a professional engineer's design that includes instructions on erection, use, maintenance and dismantlement;

(b) be equipped with guardrails;

(c) be securely attached to an industrial lift truck during use;

The fork-lift platform must be attached to the lift truck as per the manufacturers's specifications or professional engineer's design to prevent the platform from sliding on the forks. May 18, 2000

(d) be operated at all times by a competent person, who shall be continuously at the controls where the platform is in an elevated position; and

(e) be only used on a firm, flat surface that ensures the stability of the industrial lift truck, unless otherwise specified by the manufacturer.

(3) Where a fall arrest system is required by these regulations on a fork-lift platform, it shall be attached to an anchor point on the platform.

Fork-lift platforms require the use of a fall arrest system at all times. May 18, 2000

(4) Where

(a) a fork-lift platform is in an elevated position; and

(b) a person is on the platform;

the industrial lift truck supporting the work platform shall not be moved horizontally.

Industrial lift trucks are not permitted to move horizontally while the platform is in use at any elevated position including travel at floor level. May 18, 2000

Cantilevered scaffolds

35 (1) An outrigger of a cantilevered scaffold shall

(a) not extend more than 1.22 m from the edge of the bearing surface, unless it complies with subclause 24(1)(d)(i);

(b) have an inboard portion, from the fulcrum point to the point of anchorage, not less than 1.5 times the length of the outboard portion, unless it complies with subclause 24(1)(d)(ii);

(c) be securely braced at the fulcrum point against movement or upsetting;

(d) have inboard ends that are anchored against horizontal and vertical movement, displacement or upset; and

(e) comply with subsections 30(16) and (17), where used on a roof.

(2) A cantilevered scaffold shall not be used as a landing platform for loads deposited by a crane or hoist, unless

(a) fall protection is used; and

(b) a guardrail is placed at the entrance to the platform when the platform is not in use.

(3) A cantilevered scaffold must be equipped with a fully decked work platform.

Cantilevered scaffolds are typically used as light duty work platforms or heavy duty material platforms. A maximum extension of 1.22m(4.0') is permitted without a professional engineer's certification. May 18, 2000

The fulcrum point is the point at which the outrigger may tip or rotate and must be braced. May 18, 2000

The inboard ends shall be anchored to prevent movement and to provide adequate resistance for the load placed on the outboard portion. May 18, 2000

Fall protection shall be used at all times as required by Section 7. The entrance guardrail is an additional requirement to the fall protection on the platform when the platform is not in use. May 18, 2000

A fully decked work platform shall cover the entire work area, with no openings. May 18, 2000

Power operated elevating work platforms

36 (1) A power operated elevating work platform shall

(a) be equipped with positive pressure controls for the positioning of the work platform;

(b) be equipped with a power elevating mechanism equipped with positive drives for both raising and lowering the work platform;

(c) be equipped with an interlock device that limits lateral movement when the height of the work platform exceeds that specified by the manufacturer;

(d) be equipped with an elevating mechanism that, upon failure, locks the work platform in the elevated position; and

(e) be operated by a competent person at all times during use.

(2) Where an elevating mechanism fails, a person on the work platform shall be removed from the platform before the platform is lowered or repairs are made to the mechanism.

(3) Where the operator of a power operated elevating work platform is not the person being raised on the work platform, there shall be an effective and direct means of communication between the two.

(4) A power operated elevating work platform shall be designed, constructed, erected, maintained, inspected, monitored and used in accordance with the following CSA Standards, as applicable:

(a) CAN3-B354.1-M82, "Elevating Rolling Work Platforms";

(b) CAN3-B354.2-M82, "Self-Propelled

Power operated elevating work platforms are also known as scissor lifts, telescopic and articulated booms, aerial ladders and bucket trucks. May 18, 2000

Elevating Work Platforms for Use on Paved/Slab Surfaces";

(c) CAN3-B354.3-M82, "Self-Propelled Elevating Work Platforms for Use as 'Off-Slab' Units";

(d) CAN3-B354.4-M82, "Boom-Type Elevating Work Platforms"; and

(e) CSA C225 M88, "Vehicle Mounted Aerial Device".

Vehicle mounted aerial devices may be telescopic, articulating or both. Common names include aerial ladders, ladder trucks, vertical towers and bucket trucks. May 18, 2000

(5) The following information shall be readily available and accessible to the operator of a power operated elevating work platform:

(a) all of the applicable operational limitations and requirements, including those relating to the use of outriggers, stabilizers and extendable axles;

(b) the specific surface conditions required for safe use in the elevated position;

(c) such warnings as may be specified by the manufacturer;

(d) the name and number of the National Standards of Canada Standard to which the power operated elevating work platform was designed;

(e) the name and address of the owner; and

(f) a legible operator's manual.

(6) The following information shall be securely posted at the controls of a power operated elevating work platform;

(a) the rated working capacity; and

(b) other than for a boom-type elevating work platform, the direction of the machine movement for each operating control.

(7) The owner of a power operated elevating work platform shall keep a permanent record of all inspections, tests, repairs, modifications and maintenance performed on it.

(8) The record required in subsection (7) shall include the name and signature of the person who performed the inspection, test, repair, modification or maintenance.

(9) An employer shall ensure that a person who operates a power operated elevating work platform has, before using it for the first time,

(a) received oral or written instruction on the safe operation of the particular vehicle; or

(b) otherwise been adequately trained to operate that class of work platform;

(10) The instruction and training required by subsection (9) is to be given by a competent person and must include

(a) instruction in the manufacturer's specifications;

(b) instruction in applicable load limitations;

(c) instruction on the kinds of surfaces on which the power operated elevating work platform is designed to be used; and

(d) a hands on demonstration of the proper use of all controls.

(11) A power operated elevating work platform shall

(a) not be loaded in excess of its rated

Operational use of the power operated elevating work platform is restricted to within its rated capacity. Testing above the rated capacity is not considered "operating" the equipment and is permitted by the

working capacity;

design standard. May 18, 2000

(b) be used on a firm level surface unless otherwise specified by the manufacturer;

(c) be otherwise used only in accordance with the manufacturer's specifications;

(d) not be loaded and used in such a manner as to create an unstable condition or cause a hazard; and

(e) not be moved vertically or horizontally unless all persons on it are protected against falling by a fall arrest system attached to an anchor point on the work platform.

(12) Where a person is working on an elevating work platform, a fall arrest system, attached to an anchor point, shall be worn at all times.

Power operated elevating work platforms may be moved vertically and horizontally if a fall arrest system is in use. Work performed on a power operated elevating work platform also requires the use of a fall arrest system at all times regardless of the platform height. May 18, 2000

(13) Every power operated elevating work platform shall be equipped with an emergency stop button on the work platform.

Crane supported work platforms

37 (1) No work platform may be suspended from a crane or hoist unless the work to be performed cannot be done in a safe and practical manner from a conventional scaffold.

The use of a crane supported work platform is only permitted where it is not possible to accomplish the task by less hazardous means. The use of conventional scaffolds must be considered more hazardous or impossible before being ruled out as an option for performing the work. May 18, 2000

(2) The design of a hoist used for the suspension of a work platform shall be certified by a professional engineer.

(3) A crane or hoist used to suspend a work platform shall

(a) be operational in the power up and power down positions;

(b) be equipped with an automatic brake system that operates when the crane is not hoisting or lowering;

(c) be equipped with an anti-two block device;

(d) operate at a safe lifting and lowering speed; and

(e) have at least three full wraps on the hoisting drum at all times.

(4) The operator of the crane or hoist used to suspend a work platform shall have an effective means of constant communication with the person on the platform.

(5) A crane supported work platform shall have a secondary means of support, shackled above the ball of the crane, that is able to support the platform if the primary means of support fails.

Primary means of support for platforms suspended from a hoist line is the hook assembly. The secondary means of support is to be attached to the hoist line, above the primary support or hook. May 18, 2000

(6) A commercially manufactured crane supported work platform shall be erected, used, maintained and dismantled in accordance with the manufacturer's specifications.

CAN/CSA-Z150-98 Safety Code on Mobile Cranes contains details on platform requirements for commercially manufactured and professional engineer designed crane supported work platforms. May 18, 2000

(7) The design of a crane supported work platform that is not commercially

manufactured shall be certified by a professional engineer and erected, used, maintained and dismantled according to the design.

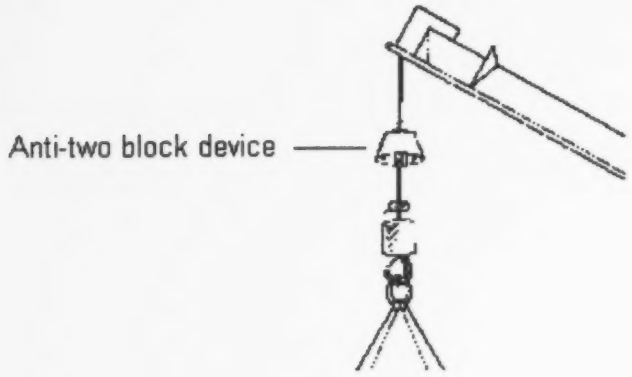
(8) A fall arrest system, attached to an anchor point on the work platform, shall be used by persons working from or otherwise present on a crane supported work platform.

Anchor points for platforms suspended from a hoist line shall be located on the work platform and are to be clearly identified as such. May 18, 2000

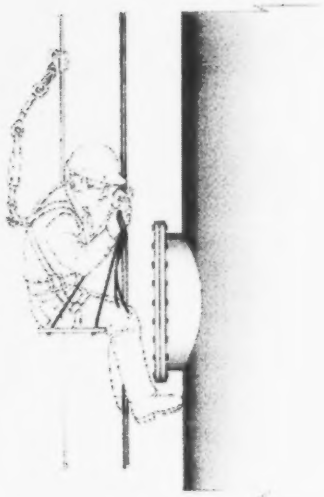
Lifting in certain equipment prohibited

38 Except as expressly permitted in these regulations or in some other enactment, persons shall not be lifted or held aloft in equipment, such as loader buckets or backhoes, not specifically designed for that purpose.

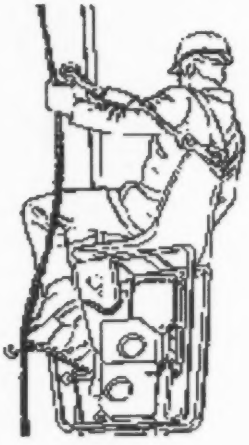
Appendix A
Anti-Two Block Device



Appendix B
Boatswain's Chairs (also called "Bosun's Chairs")



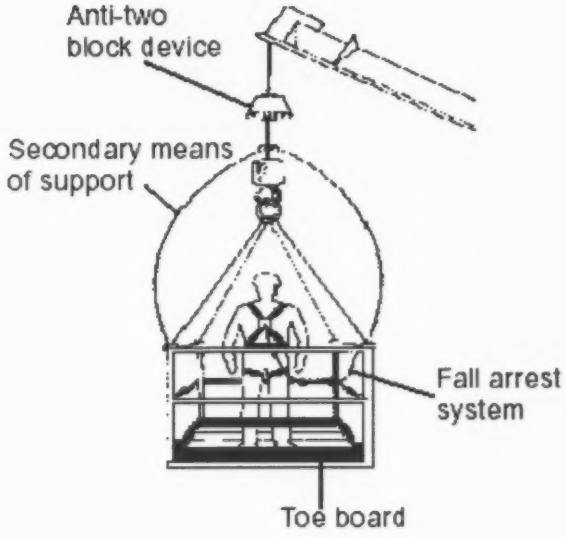
Boatswain's chair with rope falls and descent control device



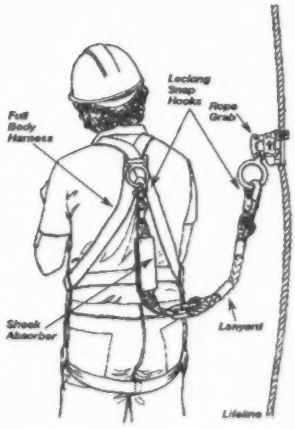
Boatswain's chair with powered climber

Source: Construction Safety Association of Ontario, *Suspended Access Equipment, Second Revised Edition*, 1997

Appendix C
Crane Supported Work Platform

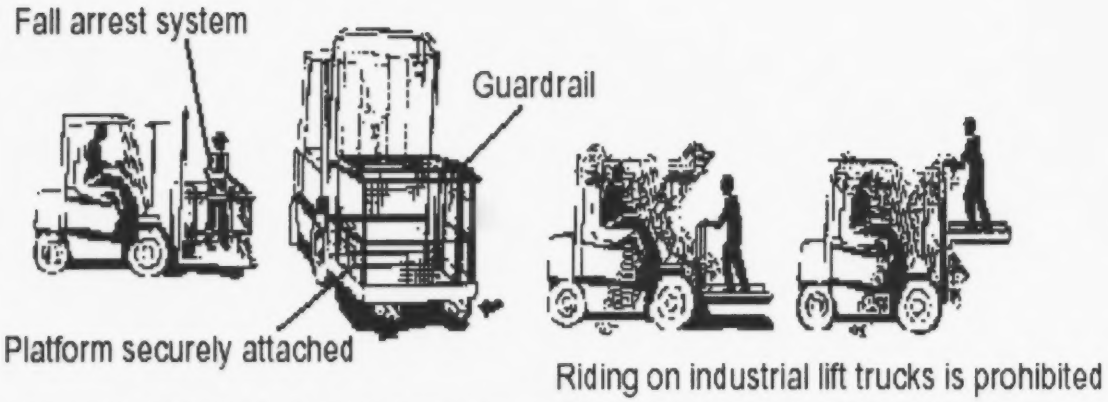


Appendix D
Fall Arrest System



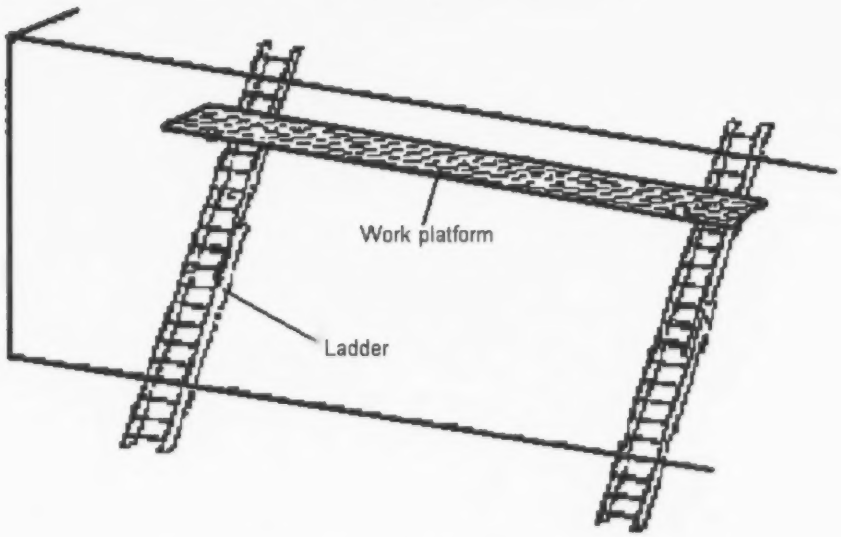
Source: Construction Safety Association of Ontario, *Suspended Access Equipment, Second Revised Edition*, 1997

Appendix E
Fork-Lift Platform



Source: Worksafe Western Australia Commission, *Code of Practice: Prevention of Falls at Workplaces*

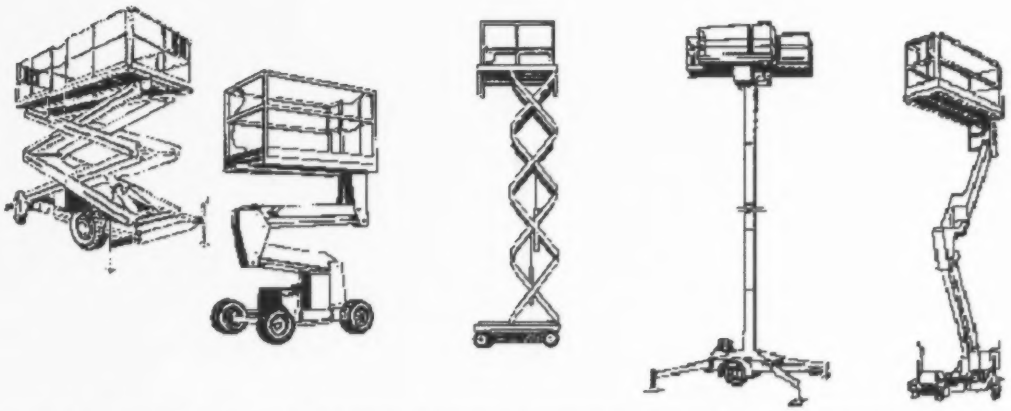
Appendix F
Ladderjack Scaffold



Note: Ladderjack scaffolds are illegal in Nova Scotia workplaces

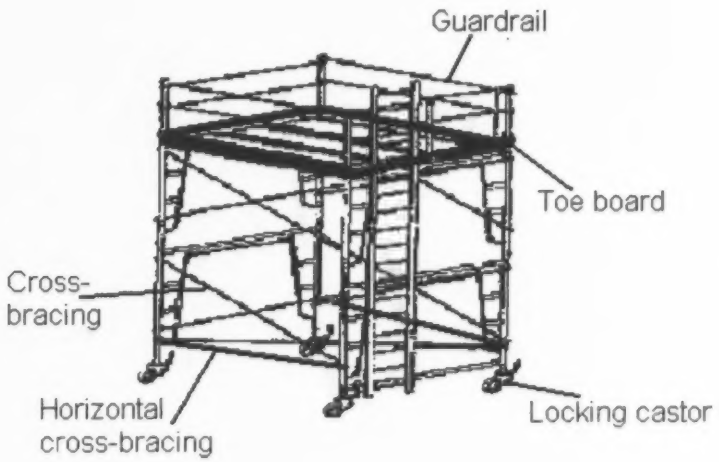
Source: Occupational Safety and Health Administration, United States Department of Labour, *Various Scaffold Types: Subpart L Scaffolds Used in Construction*

Appendix G
Power Operated Elevating Work Platforms



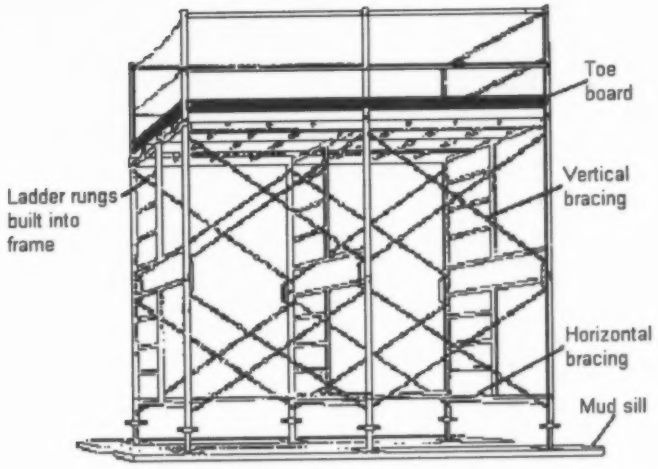
Source: Construction Safety Association of Ontario, *Construction Health and Safety Manual, Revised Edition*, 1997

Appendix H
Rolling Scaffold



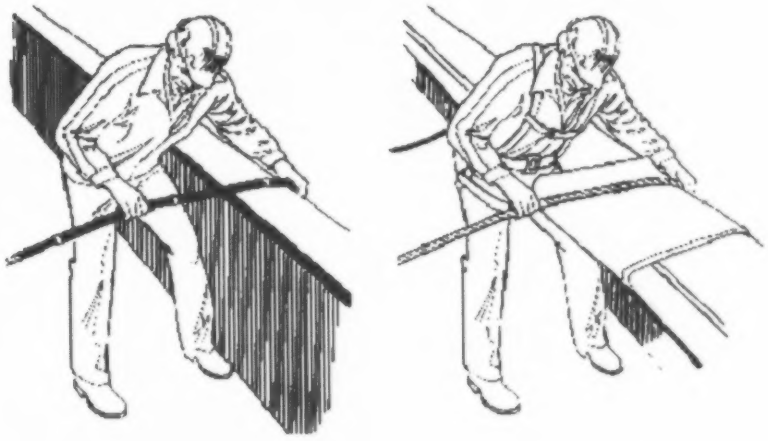
Source: Occupational Safety and Health Administration, United States Department of Labour, *Various Scaffold Types: Subpart L Scaffolds Used in Construction*

Appendix I
Scaffolds



Source: Construction Safety Association of Ontario, *Construction Health and Safety Manual, Revised Edition*, 1997

Appendix J
Softeners

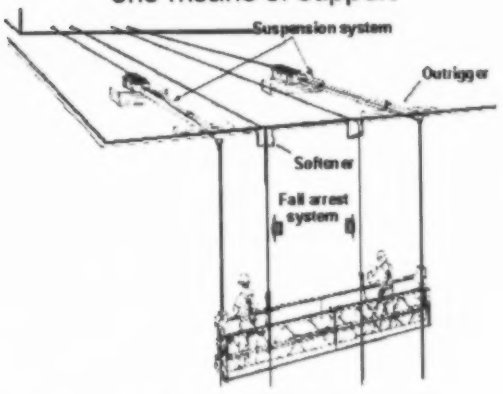


Rubber air hose secured with clamps **Carpet or rubber pad**

Source: Construction Safety Association of Ontario, *Suspended Access Equipment, Second Revised Edition*, 1997

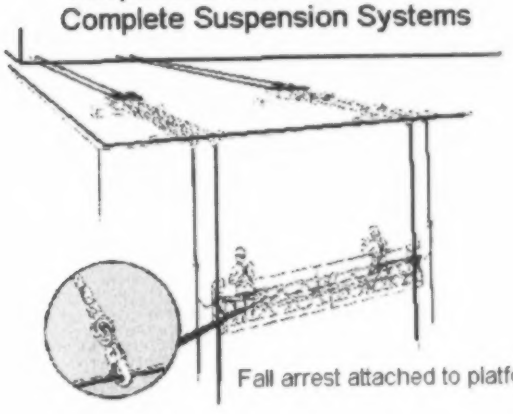
Appendix K
Suspended Scaffold

Suspended scaffold with one means of support



Fall arrest system with ropegrab and independent life line

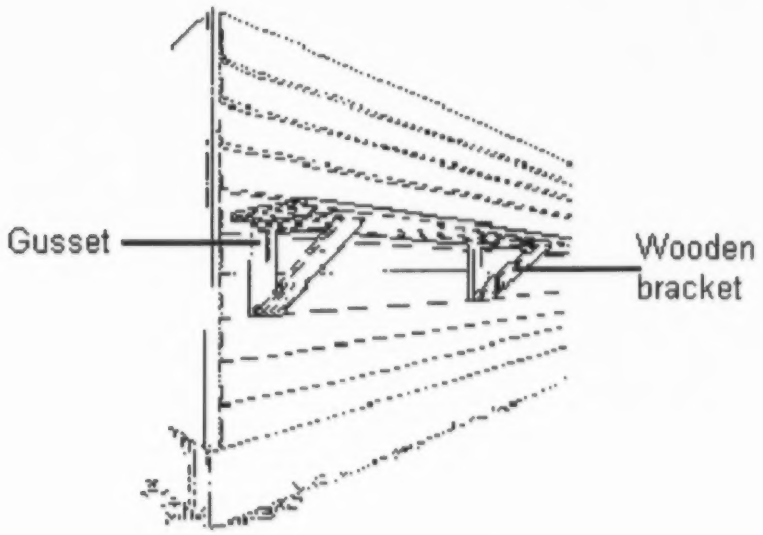
Suspended Scaffold with Two Complete Suspension Systems



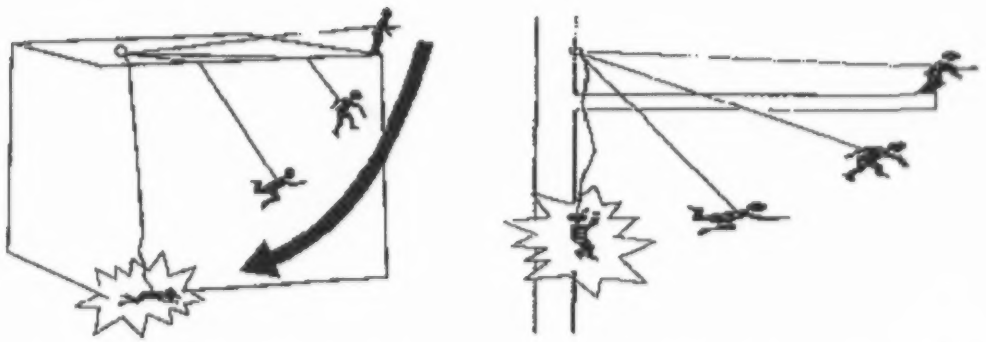
Fall arrest attached to platform

Source: Construction Safety Association of Ontario, *Suspended Access Equipment, Second Revised Edition*, 1997

Appendix L
Wooden Carpenter's Portable Bracket Scaffold



Appendix M
Pendulum Effect



Anchor points should be located directly above the worker so as to prevent any swing-fall or pendulum effect on the worker in the event of a fall.

Source: Worksafe Western Australia Commission, *Code of Practice: Prevention of Falls at Workplaces*